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(1) Number of pages ~~7~~80

(2) Date of repair 9. 10. 86.

(3) Initials of the Referencer

TAMIL NADU ARCHIVES

OVERNMENT OF TAMIL NADU

Public Works DEPARTMENT

G.O. No.
B.P. No. 4544W

Press.
Mis.

Dated 27. 11. 1878 ~~197~~.

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GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

27th November 1878, No. 4,544 W.

Buildings and Roads.
Civil Works.

Read the following papers:—

No. 328. From Major ROSS THOMPSON, R.E., Executive Engineer, Presidency Division, to the Chief Engineer, Buildings and Roads, dated Madras, 11th November 1878, No. 4,674.

WITH reference to your memorandum No. 3,512 of 9th August 1878, I have the honor to submit letter No. 3,052 of 2nd November 1878 (with plans and estimates therein referred to) from Mr. Faulkner, General Superintendent, Public Works Stores and Workshops. These plans and estimates have not been checked or examined in my Office, but are forwarded just as they were received, as you have called upon me to expedite their submission as much as possible.

1 Original letter.
8 Old plans returned.
2 Lock plans, new.
2 Estimates for do.
1 Plan for Iron Foot Bridge.
1 Estimate for do.

2. Paragraph 1 of your memorandum under reply. I am of opinion that neither a weir nor a channel is necessary at the site of the proposed lock to allow the Cooum water to pass towards Ennore during moderate rains when the Cooum Bar is not open; on sanitary grounds I think the Cooum should always be kept as full as possible, and it should as frequently as possible be scoured out by cutting its bar when the river level has attained a sufficient height to secure a good scour out. To secure this however, locks are required both in Cochrane's Canal and in the Junction Canal, because, if the Ennore and Adyar Bars happen to be open and the Cooum Bar closed, sufficient vent for ordinary freshes in the Cooum is found through the Junction and Cochrane's Canals to keep the water in the Cooum at a level below that at which a good scour could be secured by opening the bar.

3. As regards paragraph 2 of your memorandum, Mr. Faulkner has in his plan No. 21 placed the lock in the cut past the Penitentiary, between Law's Bridge and St. Mary's Bridge. This site appears to be as good as any other.

4. Paragraph 3.—Mr. Faulkner explains that the level of the lock sill in his proposed lock is the same as that of the Shadiancoopum Lock on Cochrane's Canal.

5. Paragraph 4.—Mr. Faulkner estimates the cost of valves in the masonry to be greater than if placed in the gates, and considers that in such a low lift lock very simple gearing and valves would suffice.

6. With his letter now referred to Mr. Faulkner submits plans and estimates for a new foot bridge over the Cooum, either close alongside the Wallajah Bridge, or on and over the proposed weir.—*Vide* his plan 21; designs for this foot bridge have been called for by and submitted to Government from time to time. Mr. Faulkner's designs for the foot-bridge appear to me somewhat more substantial and expensive than necessary.

No. 328-A. *Memorandum by the Chief Engineer, Public Works Department.*

THE Executive Engineer, Presidency, forwards plans and estimates of the following works :—

	RS.
For a lock to be built west of St. Mary's Bridge	35,000
(or with two pairs of gates and walled chambers, Rupees 47,530).	
For a weir to be built between St. Mary's and Wallajah Bridges ...	14,800
Small foot bridge for working shutters of weir	3,000
Foot bridge for passengers over weir	15,270

2. During the last two years an earthen bund has been put across the canal near the Hospital Bridge, with a view to keep up the level of the water in the Cooum and to keep the discharge from certain sewers out of the Cooum.

3. As regards keeping up the level of the water, the bund has answered its purpose; but, on the other hand, by preventing the flow of water towards Ennore, the portion of the canal opposite the Railway Station becomes very foul, and is only cleansed by a sudden rise of the water in the Cooum. Until the opening of the Junction Canal there was no exit for the Cooum water while the bar was closed. But now the water can pass from the Cooum to the Adyar even though the bund near the Hospital Bridge prevents its passage northwards. More than twenty years ago a lock was built at Shadiancoopum, six miles from Madras, to keep up the level of the water in the Cooum. Another lock should not, therefore, be required at Madras. The bed of the artificial portion of the canal being throughout at the same depth below mean sea level, locks should, if possible, be dispensed with altogether.

The dam proposed to be built between St. Mary's and the Wallajah Bridges is likely to cause the silting up of one branch of the Cooum, and the portion of the canal and river between the lock, dam and Hospital Bridge is likely to become very foul.

The Chief Engineer recommends that no masonry works be commenced *at present* in the limits of Madras. The small floods in the Cooum will temporarily raise the level of the water in the mouth of the river, and the surplus will gradually pass off northwards or southwards. At least once every year the Cooum Bar will have to be cut for the passage of floods which the canals cannot carry off. A periodical cleansing of the river will thus be ensured. For the removal of shoals in the river and the maintenance of a proper depth of water in the canals adjoining, it will be necessary to have a dredge.

The reports on portions of the canal during the last twenty years show a considerable difference of opinion as to the value of locks on the canal.

19th November 1878. (Signed) E. A. FOORD, Col., R.E.,
Chief Engineer, P.W.D.

No. 328-B. Note by His Grace the President.

No. 328-C. Note by the Honorable W. Hudleston.

No. 329. ORDER THEREON, 27th November 1878, No. 4,544 W.

THE questions noticed in the papers now before the Government are, in a sanitary point of view, especially, of much importance to Madras. The Governor in Council desires therefore at the earliest possible date to have before him a matured professional opinion as to what is necessary and essential to complete the canal works in such a way as to effect the objects originally contemplated, securing the sanitary condition, and also having regard to the security of the works at Mylapore as well as the navigation. With this end in view it is resolved to appoint a Committee, comprising the following Officers, to report upon the subject :—

Colonel E. A. FOORD, R.E., President,
" P. O'CONNELL, R.E., } Members,
Lieut.-Col. J. O. HASTED, R.E., }

and that the Sanitary Commissioner be requested to confer with the Committee for the purpose of advising on the sanitary questions involved.

2. A copy of the Note by His Grace the President will be furnished to the Committee as a guide to the points to which the Government desire them most especially to direct their attention.

(True Extract.)

Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer, Public Works Department. } With copy of Note by His Grace the President, and papers in original.
To Colonel O'Connell, R.E.,
" Lieut.-Colonel Hasted, R.E.,
To the Sanitary Commissioner.

Exd. E. C. Shunker.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of (1878) Madras.

PUBLIC WORKS.

To

THE CHIEF ENGINEER,
PUBLIC WORKS DEPARTMENT,
&c. &c.

Dated November 27th.

Issued

Recd.

Encl.

G. O., 27th November 1878, No. 4,544 W.

NOVEMBER

Nos. 328-329.

Construction of Dock, &c., across the Cooum.—A Committee appointed with the view of obtaining matured professional opinion as to the —.

9549/1940

4544/3

C.E.'s Memo: No 1806 d/12 April has not been sent up from Madras. It has been applied for

R.J. 30/8.

Submitted. R.J. 4/9.

[illegible] docs
pending
Keep up [illegible] for
back —
21.9.78

When was the last reminder about the lock near the General Hospital Bridge sent?
If the District Engineer did not think any alteration or addition necessary he should have reported accordingly at once

23/9 EMT

A reminder was sent

on the 11th Inst. and on the 17th the plans and estimates were sent to the D.E.

R. 23/9.

4544
4

Memorandum

from the Executive Engineer Presidency
No 4674 dated 11th November 1878

The Executive Engineer Presidency forwards plans and estimates of the following work

For a lock to be built West of St Mary's bridge Rupees	35000
(or with two pairs of gates and water chambers Rs 47530)	
For a weir to be built between St Mary's and Wallajah bridges	14800
Small foot bridge for working Shutters of weir	3000
Foot bridge for passengers over weir	1527

During the last two years an earthen bund has been put across the Canal near the Hospital bridge with a view to keep up the level of the water in the Cooum and to keep the discharge from certain sewers out of the Cooum. Besides keeping up the level of the water the bund has answered its purpose, but, on the other hand, by preventing the flow of water towards Ennore the portion of the canal opposite the Railway Station becomes very foul and is only cleansed by a sudden rise of the water in the Cooum. Until the opening of the Junction Canal there was no exit for the Cooum water while the bar was closed. But now the water can pass from the Cooum to the Adyar even though the bunds near the Hospital bridge prevents its passage Northwards.

More than twenty years ago a lock was built at Shadiancoopum six miles from Madras to keep up the level of the water in the Cooum. Another lock should not therefore be required at Madras. The bed of the artificial portion of the Canal being throughout at the same depth below mean sea level locks should if possible be dispensed with altogether.

The dam proposed to be built between St Marys and the Wallajah bridge is likely to cause the silting up of one branch of the Cooum and the portion of the canal and river between the lock, dam and hospital bridge is likely to become very foul.

The Chief Engineer recommends that no masonry works be commenced *at present* in the limits of Madras. The small floods in the Cooum will temporarily raise the level of the water in the mouth of the river and the surplus will gradually pass off Northwards or Southwards. At least once every year the Cooum bar will have to be cut for the passage of floods which the canals cannot carry off. A periodical cleansing of the river will thus be ensured. For the removal of shoals in the river and the maintenance of a proper depth of water in the canals adjoining it will be necessary to have a dredge.

The reports on ~~different~~ portions of the canal during the last twenty years show a considerable difference of opinion as to the value of locks on the canal

EMF
20/11

CMW 12765

G.O. No 1541 W/78

4544

6

PRESIDENCY WORKSHOPS, D. P. W.,
Madras, 2nd November 1878.

No. 3052

From

THE GENERAL SUPERINTENDENT,
PUBLIC WORKS WORKSHOPS,

To

THE District Engineer
Presidency
Fort St George

P.S.
6 Nov 78

SIR,

With reference to your Memo No 2807 dated 12th Aug/78 and the remarks by the Chief Engineer in No. 3572 W.D. dated 9th Aug/78, I have now the honor to submit Plans & Estimates to meet his views.

Enclosures. 3

2. I consider an Escape to allow the water to discharge before the bar is cut, a very safe precaution

3 This Weir or Escape I propose to put at some distance from the Lock, as I found it difficult to arrange to have one near or at the side of the Lock, as Boats might be drawn in by the Current. Again the Lock designed with rough sloping chamber, could not be used without good protecting Masonry on the Escape side and this would make it as expensive as the first one designed

4 I therefore, now, propose that the Lock as per Plan No IX be built in the present Channel leading from the "Cooum" under "St Mary's" Bridge see Plan No XXI.

This

5. This place recommends itself on many accounts; and particularly meets the wishes of the Chief Engineer for keeping the "Cooum" clean

6 I propose the Escape should be built at the place as shewn in Plan No XXI - that there should be 2 openings, 46 Ft wide, or 92 Ft in all

7. The planking to be 6" below the level at which it is ordered the Bund should be cut, and the Regulating boarding to be 4 Feet high.

8 As it will be necessary to have a Bridge over the Escape, to lift out and put in the Boarding, it struck me that a good Bridge for foot Passengers, would serve two purposes, vizt to regulate the height of the Boarding, and take the place of the present foot bridge at the North side of the "Wallajah Bridge"

9. I have sent under a separate cover a Plan and Estimate of a Side Bridge, as requested in a letter dated Nov 2 - 1870 No 3053

10. The Estimate amounts to R. 20,595-..-.. 5,325 + 3000 = 8325 of which will be saved by adopting this idea.

11. The Estimate for the Bridge over Weir as per Plan No XXIII amounts to Rs 15,270-..-.. and the Estimate for the Weir amounts to Rs. 14,800-..-.., but if this Plan is not accepted, then there must be added 3000 R. to the Weir Estimate, to provide a narrow Bridge to work the Shutters.

12 Advantage can be taken of the Weir, to send periodical discharges down "Cochranes Canal" at high Water, and thus keep it pretty sweet, and allow the "Cooum" water to be renewed by the rise of Tide by filtration

13 The height given ~~fo~~ Lock sill, is placed at the same level as the one at Chaddayan Coopum

4544
7

14. The cost of the Valves and Lifting Gear will be rather more expensive, placed in the Masonry, say about 200 Rs.

15 They are less liable to damage than when placed in the Gates. One set of Gearing with a Valve for filling, might be enough with such a very low lift Lock, and one for discharging, & thus a saving would be effected.

16. The Plan for Side Gearing with Valve is being proceeded with, but I find the progress so slow, that I prefer to send on the Drawings & Estimates now; especially, as I am ordered back to Bengal, and shall leave this in so short a time.

17 I have now answered the Chief Engr's Memo No 3512, & with all the original Plans & Estimates, I submit

Plan No XXI to illustrate the proposed positions of Lock & Weir.

Plan No XXIII shewing details of Weir & Bridge

Plan No XXII under separate cover with Estimate of the proposed Side Bridge for the North of "Wallajah Bridge"

Estimate of Bridge over Weir amounting to Rupees	Rs 15270-
Estimate of Masonry &ca of Weir amounting to Rupees -	Rs 14,800

I have the honor to be, Sir,
Your most Obedt Servant

Ex Engr

In Charge Pr. Works Mads

No.

From

The Genl. Supt., P. W. Workshops,
Madras,

PW 127/5/78

To

The Distt Engineer
Presidency

Dated 2 } November 1878.
Despd. 2 }

No 3052

ENCLOSURES.

Encs 12.

Subject.

Forwards Plans & Estimates called for by the Chief Engr of Madras, regards the Weir proposed to be constructed across the "Cooum" near Wallajah Bridge, with certain remarks

---

Detailed Estimate of the probable cost of a Wrought iron Lattice Girder foot Bridge (across the Cooum River along the Wallajah Bridge) supported on screw piles

4544

8

Particulars of Work	No.	Measurement Length each	Measurement Length total	Breadth	Thickness	Cubic Contents	Total of each kind of work
[illegible]							
Screw piles 8" diameter and 25 feet long	6						6
Wrought iron pins for Couplings	30	1	30	1½ diam			
Cast iron bottom Screw	6						6
Do Ornamental heads	6						6
Lattice Girder one Span							
Angle iron for flanges ft	2		160	3"×3"×½"		1680	
Do for bottom curves ft	1		100	3"×3"×½"		1050	
Flat iron for top web ft	1		35	35	½"	525	
Do bottom Do ft	1		35	21"	½"	1225	
Do top flange	1		35	6"	½"	350	
Lattice Bars	48	4¾	228	3½"	½"	958	
Top flange centre plate	1		18	6"	½"	180	
Lattice bars	28	2½	70	3½"	½"	294	
Bottom web at curve	1		50	9"	½"	750	
						7012	
Joint covers and straps &c. @ 10 per cent						701	
						7713	
Rivets at 10 per cent						771	
						8484	
Allowance for wastage at 5 per cent						426	
Cast iron brackets for outside struts	2					460	460
Wrought iron Struts	2	5	10	1½		60	
Rivets						20	
Grand Total weight of one span							9450
Longitudinal Girders for seven spans							66150

Details Continued

Particulars of Work	No.	Measurement Length each	total	Breadth	Thickness	Cubic Content or weight	Total of each kind
Angle iron for Cross Girders	6	60	360	2½"×2½"×½"		2700	
Do Do	7	52	364	Do		2730	
Web plate for Do	6	12	72	12"	¼"	360	
Do Do	6	3	18	2½	¼	225	
Do Do	7	12	84	1"	¼	420	
Rolled iron joists 5" 5¼ 3½"	42	12	504	5¼	⅜	8064	
Fastenings for joists	168	9"	126	4"	½	840	
						15339	
Straps and joint covers @ 10 per cent						1533	
						16872	
Rivets and fastenings &c at 5 per cent						844	
						17716	
Allowance for wastage at 5 per cent						884	
Total weight of joists and cross girders							lb 18600
Roadway planking							
Planking teakwood	2	232	464	10	2"	773	773
Iron spikes for cover plank bent to bottom of angle iron after driven 8"×½"×½"	1200					700	700
Abutments and wings							
Brick jelly in chunam for filling in wells	8	4	32	3	8	768	
Space between wells	4	12	48	6"	8	192	960
Square wells for foundation of abutments	8	18	144	1	8	1152	

Carried over 1152

Details Continued

Particulars of Work	No.	Measurement Length each	total	Breadth	Thickness	Cubic Contents or weight	Total of each kind of work
Brought over						1152	
Abutments above	2	11	22	8	12	2112	
Wing walls below	2	22	44	2	6	528	
Do Do above	2	22	44	1½	18	1188	
Formation of abutments	2	12	24	10	6	1440	6420
Pointing abutments	2	19	38	12		456	
Do Wings	2	23	46	22		1012	1468
Excavating foundation and filling in for abutments and wings						4080	C yar. 151
Removal &c &c							
Erection Charges							
Contingencies @ 5 per cent							

Ex. Engineer
In ch. of [illegible] Works

Madras
2d November 1878

Abstract of the foregoing Estimate of a W. I. Lattice Girder Foot Bridge of Seven spans

Quantity	Description of Works	Rate	per	amount	Total
151.	Cubic yards excavating foundation	" 2 "	Cy	18 14 "	
960	Cft Concrete for filling in wells	" 2 5		145 " "	
6420	" Brick work in Chunam	" 2 6		1003 2 "	
15¾	Square of Pointing with white Chunam	2 " "	sq	31 8 "	
6	Wrought iron piles 8"	500 " "	each	3000 " "	
30	Round pins for piles	1 8 "	each	45 " "	
6	Bottom screws	50 " "	"	300 " "	
6.	Ornamental heads	30 " "	"	180 " "	
66150	Iron for Longitudinal girders	" 1 6	lb	6301 8 "	
18600	Do for Cross Girders	" 1 6	"	1743 12 "	
773	Cft. Teak planking for roadway	3 " "	cft	2319 " "	
700	lb Spikes for planking	" 3 "	lb	131 4 "	
	Labor for making up the Bridge			2100 " "	
	Removal of iron works to site of Bridge			200 " "	
	Erection charges say			2000 " "	
				19519 " "	
	Contingencies at 5 per Cent			976 " "	
	Total Estimated cost Rupees				20595 " "

Ex. Engineer
Inch. of Engg. Pt. Workshops

Detailed Estimate of the probable cost of Constructing a Wrought Iron Lattice Girder foot Bridge over the Calingulah or Weir proposed to be erected across "the Cooum" near the Wallajah Bridge.

Particulars of Works		Measurement Length Each Wall		Breadth	Thickness	Cubic Content	Total of each kind of Work
							Cyds.
Approaches of Bridge	2	20	40	16	3	1920	71
Abutments	2	20	40	10	5	2000	
Pier	1	20	20	7	5	700	
Wing Walls	4	18	72	2	5	720	
Parapet Walls	4	15	60	1½	3	225	
Total Brickwork							3645
Abutments	2	20	40	5		200	
Pier	1	56	56	5		280	
Wing Walls	4	18	72	5		360	
Parapet Walls	4	15	60	7½		450	
Total Squares of pointing							13
Outside longitudinal Girders for two spans 46' each and 106 Feet over all in proportion to other Estimates	4					57,240	
Longitudinal Girders in the Centre	2					12,164	
Total Longitudinal Girders							69,404
Lattice Cross Girders 7½' x 1' between Longitudinal Girders at 300 lb each	14					4,200	

Details Continued

Particulars of work	No.	Length Each	Length Total	Breadth	Thickness	Cubic Contents	
Rolled iron cross joists 3 / 3/8" / 3½ Fastenings for joists	31	15	465			11440	
Straps & joint covers	124	9"	93	4"	½	823	
						12263	
at 10 per Cent						1226	
						13489	
Rivets & fastenings &ca at 5 per Cent						674	
						14163	
allowance for wastage at 5 per Cent						707	
Total weight of cross Girders & joists							14870
Grand Total weight of iron work							84274
							C.Ft
Teak planking for Roadway	2	106	212	1'5"	2	530	530
Iron spikes for top and lower planking bent to bottom of Angle iron after driven home	1150					640	640

P.W. Workshops
Madras
2nd Nov 1878

Executive Engineer
In Charge P.W. Workshops

[illegible]

Abstract of the foregoing Estimate of a Girder Foot Bridge over the Calingulah or Weir proposed to be constructed across "the Cooum."

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Quantity	Description of work	Rate Rs a p	per	Amount Rs a p	Total Rs a p
71	Cubic Yards of earth work	" 1 .	C.Yd	4 7 0	
3645	Cubic Feet Brick Work	" 2 6	C.F.	569 8 0	
13	Squares of pointing	" 14 .	Sqr	11 6 0	
69404	lbs Iron Work in longitudinal Girders	" 1 6	lb	6,506 10 0	
14870	lbs Do in cross Girders	" 1 6	lb	1,394 1 0	
530	C.Feet teak planks for Roadway	3 " "	C.F.	1,590 0 0	
640	lbs Spikes for flooring	" 3 "	lb	120 0 0	
	Labour for making up the Girders			2,200 0 0	
	Removal to site of Bridge			150 0 0	
	Erection Charges			2000 0 0	
				14,546 0 0	
	Contingencies at 5 per Cent			724 0 0	
	Total Estimated cost of Bridge				15,270 0 0

P.W. Workshops
Madras
2nd Nov 1878

Ex Engineer
In Charge P.W. Workshops

[illegible]

4544
12

Detailed Estimate of the probable cost of a Calingula with certain grooved Standards and Teakwood Shutters in compliance with the Chief Engineer's Memorandum No. dated of 1878

P.C.
C NO: 73

Particulars of of Work	No.	Length each	Length total	Breadth	Height of	Cubic Contents	Total of each kind of work
Making new Embankment	1	600	600	200	8	960000	
Approaches to wings of Calingula	2	30	60	15	3	2700	
Total cubic yards of filling in							35655
Abutments of Calingula	2	21	42	14	16	9408	
Pier of Do	1	21	21	10	16	3360	
Wings of Do	4	20	80	4	8	2560	
Total cubic yards of Excavating							568
Below Retaining walls	26	12	312	1	8	2496	
Below abutments	16	16	256	1	8	2048	
Do Pier	8	16	128	1	8	1024	
Do Wing Walls	16	16	256	1	8	2048	
Do body of Calingula	48	16	768	1	8	6144	
Total Cubic ft Brick work							13760.
Below Abutments	16	3	48	3	8	1152	
Do Pier	8	3	24	3	8	576	
Do Wing Walls	16	3	48	3	8	1152	
Do Body of Calingula	48	3	144	3	8	3456	
Do Retaining Walls	26	2	52	2	8.	832	
Total Cubic ft of Concrete.							7168.

Details Continued

Particulars of Works	No.	Measurement Length each	Length total	Breadth	Thickness	Cubic Contents	Total
Abutments below	2	21	42	13½	8.	4536	
Do above	2	20	40	10	8	3200	
Piers below	1	21	21	10	8	1680	
Do above	1	20	20	7	8	1120	
Wing walls below	4	20	80	4	8	2560	
Do above	4	18	72	2	8	1152	
Retaining wall	1	120	120	4	2	960	
Do above	1	120	120	2	2	480	
Body of Calingula	2	46	92	14	8	10384	
Do above	2	46	92	8	3	2208	
Total Brick Works C ft							28
Body of Calingula above	2	46	92	14		1288	
Abutments Do	2	20	40	8		320	
Pier Do	1	56	56	8		448	
Wing Walls	4	20	80	8		640	
						2696	
Total squares of Pointings							27
Apron within retaining wall	1	100	100	18	6	10800	
Do out of Do	1	100	100	30	2	6000	
Total rough stone C ft							1680
Cast iron groove Standards		14					7

Details Continued

Particulars of Works	No.	Measurement Length each	Length total	Breadth	Thickness	Cubic Contents	Total each work
Iron Sup. for bottom rest	12	3¼	39	} × 1½ × 1½ = 653			
Do diagonal Strut	12	4 × 48					
Lifting works for shutters	96	9° = 72 × 2½ × ½ =				300	
Small bolts and nuts	300					= 300	
Total Iron Work							1253.
Shutters	96	7½ = 720 × 12" × 3" =				180	
Total Cubic ft of Teak shutters							180.

Ex. Engineer
In ch. of Irrg. P.W. Workshops

Abstract of the foregoing Estimate of a Calingula proposed to be erected in the Cooum near Wallajah Bridge.

Quantity	Description of Work	Rate	℘	amount	Total
35655	Cyds of filling in earth work	" 1 "	Cft	2228 7 "	
568	do Excavating foundation	" 2 "	"	71 " "	
4168	Cft. Concrete for Wells	" 2 5	Cft	1082 10 8	
42030	" Brick work in Chunam	" 2 6	"	6567 3 "	
27	Sqr. Pointing Masonry	" 14 "	Sqr	23 10 "	
16800	Cft. Rough stone Apron	" 2 3	Cft	2362 8 "	
7	Tons of Cast iron Standards	140 " "	Ton	980 " "	
1253	lbs Iron Work	" 3 "	lb	234 15 "	
180	Cft. Teak planks 3"	3 " "	Cft	540 " "	
				14090 5 8	
	Contingencies @ 5 per cent			709 10 4	
	Total Estimated Cost of Calingula Rupees				14800 " "

C. W. Faulkner Ex Engineer
In ch: of Imp: P.W. Workshops

Madras
2nd Novr 1878

No. 4674.

4544
14

From,

The Executive Engineer,
Presidency Divn.

To,

The Chief Engineer,
Roads and Buildings.

Enclosures.

1. Original letter
8. Old plans Returned
2 Lock Plans new
2 Estimates for do.
1. Plan for iron foot bridge
1. Estimate for do

Sir,

With reference to your Memorandum No. 3572 of 9th August 1878, I have the honor to submit letter No. 3052 of 2nd November 1878 (with plans and estimates therein referred to) from Mr. Faulkner, General Supt P.W. Stores and Workshops. These plans and estimates have not been checked or examined in my Office, but are forwarded just as they were received, as you have called upon me to expedite their submission as much as possible.

2. Para 1 of your Memo under reply. I am of opinion that neither a weir nor a channel is necessary at the site of the proposed lock to allow the Cooum water to pass towards Ennore during moderate rains when the Cooum Bar is not open. On sanitary grounds I think the Cooum should always be kept as full as possible, and it should

as

as frequently as possible be scoured out, by cutting its bar when the river level has attained a sufficient height to secure a good scour out. To secure this however, locks are required both in Cochrane's Canal and in the Junction Canal because, if the Ennore and Adyar bars happen to be open, and the Cooum bars closed, sufficient vent for ordinary freshes in the Cooum is found through the Junction and Cochrane's Canals to keep the water in the Cooum at a level below that at which a good scour could be secured, by opening the bar.

3. As regards para 2 of your Memo: Mr Faulkner has in his plan No: 21 placed the lock in the cut past the Penitentiary, between Law's Bridge and St. Mary's Bridge. This site appears to be as good as any other.

4. Para 3. Mr Faulkner explains that the level of the Lock sill in his proposed lock is the same as that of the Sheddyan Coopum Lock on Cochrane's Canal.

5. Para 4. Mr Faulkner estimates the cost of valves in the masonry to be greater than if placed in the gates, and considers

that

that in such a low lift lock, very simple gearing and valves would suffice.

6. With his letter now referred to, Mr Faulkner submits plans and estimates for a new foot bridge over the Cooum, either close alongside the Wallajah Bridge, or on and over the proposed weir, vide his plan XXI; designs for this foot bridge have been called for by and submitted to Government from time to time. Mr Faulkner's designs for the foot bridge appear to me somewhat more substantial and expensive than necessary.

I have the honor to be
Sir,
Your most obedient servant

Major R.E.
Executive Engineer,
Presy: Divn

Pantheon Road,
Madras 11th Nov: 78.

Exd

P.W. 1878 Dep

No: 12765

Roads and Buildings

From,

The Executive Engineer
Presidency.

No 4674.

dated 11th }
Recd 12th } Novr 1878.

x No. of Enclosures, ~~15~~ 16
Pl 11 — 8 Plans put up with this & returned to the Ex: Engr Buckingham Canal vide Memo: No 575/4 of 8-1-

Lock.—

Submits plans and estimates for the proposed new — ~~at~~ near the General Hospital Bridge.

Cno 4549 4 En x 1 P.
Ce 4756. 21-10-78.
" 4576 10-10-78.
" 4069 11-9-78.
" 4172 17-9-78.
" 3572 9-8-78.
" 3009 8-7-78
" 2964 6-7-78
" 1367 18-3-78.
" 3882 13-11-77
GO 15-5-78 No 2174 W
" 10-8-78 " 3197 W.

ar 10-4.

4544
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Note by His Grace the President

-

The questions raised in these papers are of much importance in a sanitary point of view to Madras.

The Canal communication now connects the Coum, Adyar and the sea at Covelong - the open connection with Ennore is closed by Shedian Coopum Lock.

The Canal between the Coum and Shediancoopum Lock has been allowed to be used as the common outfall for sewers of a portion of the town not only of that surface which naturally drains into it but for sewers from other portions.

The Coum receiving much of this foul water - and many other drains has

has been purified by the periodical scouring when the bar is opened by the floods or artificially.

—

The Adyar is a fairly pure stream the basin of which has hitherto been filled up through the time of S.W. current by inflow of water from the sea by Covelong bar and through the South Canal. Floods opening the bar in the same way as the Coum bar

—

For the sanitation of Madras it is essential that the Coum be kept as pure and scoured as frequently as can be.

—

When the Junction Canal was commenced it was intended either by regulating lock on South Canal or by other arrangements at the Adyar to prevent escape of Coum water

4544/17

through the Adyar bar or down South Canal and to let the Adyar water on the contrary flow through the Junction Canal to the Coum and thus aid in obtaining supply of water and scour in the Coum.

That in all ordinary times the outflow of the Coum water should be through North Canal to Ennore. and in floods through Coum bar to the utmost extent. For this purpose it was considered by General Walker necessary that a lock and weir should be formed near Hospital Bridge.

Answering the double purpose of keeping the Coum at a regular height. the Canal to Sediancoopum navigable. which if the Coum falls very low it is not. and — keeping out the foul water from the Coum —

The canal being kept fresh by the lockage water — or overflow into it and which would pass out northwards extreme difficulty has been hitherto found from nature of soil —— apparently in keeping the Canal to a proper depth between the basin and Thedian Coopum Lock and on the two occasions I have passed down it I have found ——— Cargo boats aground and on one when Coum was about M.S.L. or a little below – The light boat in which I was grounded more than once – in what should have been the fair way and unless changes have been made since, that portion of the Canal is not navigable if Coum be at Low water mark –

Now as regards the sanitary question the Canals having been cut and communication opened from the Coum to the Adyar, Covelong and Palar –

if regulating works are abandoned it is not probable that the Coum bar will be ever naturally opened unless in some very exceptional storm – or that – if opened artificially there will be any scour – instead of the additional force of Adyar water brought to aid the Coum The Coum water itself will pass away to the Adyar and southwards. The Salt water will be freely admitted from the south through the Junction Canal which would otherwise be almost fresh and

risk the salting of adjoining wells. I think therefore that a decision to abandon all masonry works must not be lightly come to –

That the Chief Engineer should report on all the various phases of the question - and the reasons for which he would abandon all and allow the conditions contemplated when the Canals were commenced to be reversed. I think there is cause in such a course to apprehend very grave sanitary evils.

—

Locks are no doubt prima facie evils in navigation - and expenditure also an evil - but both may be necessary -
Possibly they may be avoided - but the question is a very grave one in this instance and requiring very prompt determination.

-

As regards the particular plans submitted the 1st question is what is essential - the plans and

cheapest mode of doing it may then be easily settled - but time must not be lost.

The nuisance in the Canal and near the Railway station has arisen from two causes -

1st the removal of the bund for some cause from near the bridge to a considerable distance below - necessitating the forming a reservoir and foul channel along the side of the Railway station - which did not exist last year.

2nd the non completion of works to prevent the escape of Coum water southwards - So that the slight flow to the Coum which was maintained last year and the previous year was lost.

(Initialled) Baird S.
22/11

4544/70

Public Works Department.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

~~Under date the~~

Read the following :—

From,
The Executive Engr. Presidency } (H.E. No. 4674 d/ 11th Nov/78)

Memo by Chief Engr. (" ——— " 19th — do —

Note by His Grace the President
" Hon'ble W. Hudleston.

Order thereon 27th Nov/78, No. 4544 W.

The questions noticed in the papers now before the Govt. are, in a sanitary point of view especially, of much importance to Madras. The Governor in Council desires therefore at the earliest possible date to have before him a matured professional opinion as to what is necessary and essential to complete the Canal works in

such

such a way as to effect the objects originally contemplated, securing the sanitary condition - and also having regard to the security of the wells at Mylapore - as well as the navigation.

With this end in view it is resolved to appoint a Committee, comprising the following Officers, to report upon the subject :-

Coll: G. A. Foord R.E. President
Col: P. O'Connell R.E. }
Lt Coll: J. O. Hasted R.E. } Members.

And that the Sanitary Commissioner be required to confer with the Committee for the purpose of advising on the sanitary questions involved.

2 - A Copy of the note by His Grace the President will be furnished to the Committee

guide to the points to which the Govt. desire them most especially to direct their attention.

(True Extract)

Ed Ward Coll: R.E.
Secy: to Govt. P.W.D.

To The Chief Engineer
P.W.D. with copy of note by His Grace the President

E: Has

Note by Lieutenant Colonel Hasted R.E.

I go further than the Committee, while generally agreeing with the recommendations made. I think it is very desirable to construct Locks at the entrances of the Northern and Junction Canals to the Cooum. By so doing I believe we can. 1st keep all the Black Town sewage out of the Cooum and 2nd maintain a complete command of the river water. I think these are advantages worth paying for.

I think they would be accompanied by much injury to Black Town and the Central Railway Station.
R O'Connell - [illegible]

The state of the Cooum is bad enough as it is, but I think there is no doubt it will be far worse, if the sewage which at present falls into the canal above the Hospital Bridge is admitted. If possible, therefore, this sewage should not be admitted.

3. While the ends of both canals are open we have not complete command of the river water. When a small fresh comes down the Cooum, as happened this year, the water escapes to the north and south, and the bar is not opened. If the small fresh of this year had not escaped in this way, the bar must have been opened and might with a little trouble have been kept open a month or two. There is a difference of opinion as to the benefit [illegible] that would have been derived from the Bar having thus been opened while the fresh was insufficient to cause an appreciable scour; I think the benefit would have been considerable, that the ebb and flow of the tide would have been very beneficial to the river and that the river would not, had the bar been thus opened, become so offensive early in the hot season as it is probable it now will,

4. I do not think that Locks at the entrances of the canal are so objectionable as has been stated, or that the hindrance they would cause to navigation would be of much importance. And I think it will be found desirable, when the canal is completed to full dimensions which I conclude will be such

as to give a depth of at least 8½ feet at low water; that all entrances of the canal into rivers should be provided with locks.

5. I recommend therefore the early construction of locks at the entrances of both canals. The northern Lock should, I think be constructed a little above the Hospital Bridge – both sills 4 or 4½ feet below L.W. length 150 feet and width 20 feet in the clear (the size of a 1st class Lock in the northern Deltas), the gates to open towards the Cooum. Attached or in close proximity to the Lock I would build a weir pierced with one or two sluices with their sills on the

same level as the Lock sills,
arranged so as to pass water
either way: I would then remove
the gates of the Shadiem Coopum
Lock and allow the tide from the
Ennore Bar to run up to the new
Lock. Whenever the surface of the
Cooum was above H.W.L. the sluices
could be opened and a sufficient
current induced in the canal to
send the sewage down towards
Ennore Ellore. The crest of the weir would
be at H.W.L. and shutters on it
would enable the water in the
Cooum to be held up to 3 feet
above that level, or passed into
the canal if considered desirable.
The Lock would be provided with
plank shutters working in grooves

in the masonry, above the upper gates, so that the gates could be opened against a small head of water if desirable, or in the event of flood water coming from the north which it was not considered desirable to admit into the Cooum, it could be kept out. On the other hand arrangements could be made to fasten back the lock gates so that a flood from the north could be admitted into the Cooum. By working this lock and weir carefully I believe much objectionable matter could be kept out of the Cooum, while full advantage could be taken of any water entering the canal from the north, to raise the level of water in the river.

6. The Lock into the Junction canal would be precisely similar to that above described, but no weir would be necessary.

Johnstone.
Lieut. Colonel. R.E.

9th January 1879.

The questions raised in these papers are of much importance in a sanitary point of view to Madras —

The canal communication now connects the Cooum Adyar & the sea at Covelong & the open connection with Ennore is closed by Sheddian-coopum Lock —

The Canal between the Cooum & Shed. locks has been allowed to be used as the common outfall for sewers of a portion of the town — not only of Chethrypore

which naturally
drains into it - but for
sewers from other
Junctions —

The Cooum receiving
much of this foul
water - & many other
drains has been
purified by the
periodical scouring
when the bar is opened
by the floods or artificially

The Adyar is a fairly
pure stream - the
bar of which has
hitherto been filled
up through the time of
S.W. current - by inflow
of water from the sea —

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by Covelong bar & through
the South Canal —
Floods opening the bar
in the same way as the
Cooum bar —

For the Sanitation of
Madras it is essential
that the Cooum be
kept as pure &
scoured as frequently
as can be —

When the junction Canal
was commenced it was
intended either by
regulating locks on
South Canal - or by
other arrangements

at the Adyar to
prevent escape of Cooum
water to by the Adyar bar
or down South Canal
and to let the Adyar
water in the contrary
flow through the Sn.
Canal to the Cooum &
thus aid in attaining
supply of water & scour
in the Cooum —

That in all ordinary
times the outflow of
the Cooum water should
be through North Canal
to Ennore — & in floods
through Cooum bar
to the utmost extent —
For this purpose

it was considered
by Gen Walker necessary
that a lock & weir
sh'd be formed near
Hospital Bridge —
answering the double
purpose of keeping
the Cooum at a regular
height — the canal
to Shed. compoun
navigable — which if the
Cooum falls very low it
is not — and — keeping
out the foul water
from the Cooum —
The Canal being kept
fresh by the lockage
water & overflow into
it & which would
pass out Northwards

extreme difficulty
has been hitherto found
from nature of soil
apparently in keeping
the Canal to a proper
depth between the
basin & Shed-C Locks
and on the 2 occasions
I have passed down
it I have found
cargo boats aground
and on one when
Cooum was about
M.S.L. or a little
below — The light
boat in which I was
grounded more than

once in what should
have been the fair-way
and unless changes

have been made since
that portion of the Canal
is not navigable if
Cooum be at low water
mark —

Now as regards the
Sanitary question
the Canals having been
cut & communication
opened from the Cooum
to the upper Covelong
& Palar —
~~It is not probable that~~
~~the~~ if regulating
sluices are abandoned
it is not probable that
the Cooum bar will be
ever materially opened
unless in some way

exceptional storm at
or that of opened
artificially there will
be any scour instead
of the additional
force of Aegar water
brought to aid the Canal
The Canal water itself
will pass away to the
Aegar & Southwards
The salt-water will
be freely admitted
from the South through
the junction canal
which would otherwise
be almost fresh
with the ~~[illegible]~~
Salting of adjoining
wells

I think therefore
that a decision to
abandon all scouring
works must not be
lightly come to —
That the C. E. shd report
on all the various phases
of the question - & the
reasons for which he
would abandon all
& allow the conditions
contemplated when
the Canals were
commenced to be
ignored —
I think there is cause
in such a course to
apprehend only

great Sanitary
Evils —

Locks are no doubt
prima facie evils
in Navigation — and
Expenditure also an
Evil — but both may
be necessary —
Possibly they may be
avoided — but the
question is a very
grave one in this
instance requiring
very prompt determination

—

as regards the particular
plans submitted

the 1st question is
what is essential —
the plain & cheapest
mode of doing it may
then be easily settled —
but time must not be
lost —

The nuisance in
the Canal & near the
N.W. station has arisen
from 2 causes —
1st the removal of the
Sand for some cause
from near the bridge
to a considerable
distance below. necessitating
the forming a narrow

G O No 4544 W [illegible]

& foul drainage along the side of the N.W. Station, which did not exist last year –

2nd. The non completion of works to prevent the escape of Cooum water Southwards – so that the slight flow to the Cooum which was maintained last year & the previous year was lost –

22/11

I quite concur in opinion with the H.G. as to the necessity of having as speedily as possible a matured professional opinion as to what is essential & the best means of providing it – I think ~~that~~ a Committee of the best Engineering authorities we can command at Madras wd. be desirable in such an important matter.

It appears to me that if Cochrane's canal be "locked" at both ends it will be practically converted into a prolonged Cesspool & become an intolerable nuisance.

The dam below Hogg's Bridge sh. I presume be removed if the new lock were built

22.11.78

PUBLIC WORKS DEPARTMENT.

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From the Executive Engineer Presidency
No. 4674 d/ 11 November 1878.
From the Chief Engineer P.W.D. d/ 19th
November 1878.

FOR ORDERS.

E A Ford Col. R.E.
Secretary to Govt. P.W.D.

Nov. 1878.

E.A.F.

P. W. D.

P3
4544
33

Memorandum

From the Executive Engineer Presidency
No 4674 d/ 11 November 1878.

The Executive Engineer Presidency forwards plans and estimates of the following works.

For a lock to be built West of St Mary's bridge - - Rupees 35000 (or with two pairs of gates and walled chambers Rs: 47530)

For a weir to be built between St Mary's and Wallajah bridges - 14800

Small foot bridge for working shutters

of weir - - - - 3000.
Foot bridge for
passengers over weir. 15270.

During the last two years an earthen bund has been put across the canal near the Hospital bridge, with a view to keep up the level of the water in the Cooum, and to keep the discharge from certain sewers out of the Cooum.

As regards keeping up the level of the water the bund has answered its purpose, but, on the other hand, by preventing the flow of water towards Ennore the portion of the Canal opposite the Railway Station becomes very foul and is only cleaned by a sudden rise of the water in the Cooum.

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Until the opening of the Junction Canal there was no exit for the Cooum water while the bar was closed. But now the water can pass from the Cooum to the Adyar even though the bund near the Hospital bridge prevents its passage Northwards. More than twenty years ago a lock was built at

Shadianooppum six miles from Madras to keep up the level of the water in the Cooum. Another lock should not therefore be required at Madras. The bed of the artificial portion of the Canal being throughout at the same depth below mean sea level, locks should if possible be dispensed with altogether.

The dam proposed to be built between St. Mary and the Wallajah bridge is likely to cause the silting up of one branch of the Cooum and

I presume the Dam will be dispensed if the Lock is built.

the portion of the Canal and river between [illegible] the lock, dam and hospital bridge is likely to become very foul.

The Chief Engineer recommends that no masonry works be commenced *at present* in the limits of Madras.

The small floods in the Cooum will temporarily raise the level of the water in the mouth of the river and the surplus will gradually pass off Northwards or Southwards at least once every year.

the [illegible] bar will have to be cut for the passage of floods which the Canals cannot carry off. A periodical cleansing of the river will thus be ensured. For the removal of shoals in the river and the maintenance of a proper depth of water in the canals adjoining it will be necessary to have a dredge.

? This does not appear much likelihood of [illegible] this year at least

The reports on portions of the Canal during the last twenty years show a considerable difference of opinion

P6

as to the value of locks on the Canal.

40544
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E A Bird Col: R.E.

Chief Engineer P.W.D.

19 November 1878

Ex: E.A.S.

No. 4544 W.

Public Works Department.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

UNDER date the 27th Nov/78.

Read the following :—

H.S.

From the Sa: Engr Presidency (H.E. No 4674 d/11 Nov/78)

Memo by Chief Engineer (— d/19 Nov/78)

Note by His Grace the President.

Hon'ble W. Hudleston.

NB/
261.

The questions raised in the papers now before the Government are from a sanitary point of view of much importance to Madras. The Governor in Council desires therefore at the earliest possible date to have before him a matured professional opinion as to what action should under the circumstances of the case be taken -

4544
38

With this end in view it is resolved to appoint a Committee, comprising the following Officers, to report upon the subject:—

Col R. A. Foord R.E. – President

Col P. O'Connell R.E.
Lt Col J. O. Hasted R.E. } Members

and that the Sanitary Commissioner be requested to confer with the Committee for the purpose of advising on the Sanitary questions involved –

A copy of the Note by His Grace the President will be furnished to the Committee as a guide to the points to which the Government desire them most especially to direct their attention.

LH
26.11.78.

EW 26/11

Ch Engr P.W. Dept ✓
Col O'Connell R.E. ✓
Lt Col Hasted R.E. ✓ } with copy of Note by His Grace the President and papers in original

~~Con Engr Rys~~

~~Finl. Dept~~

✓ Sanitary Commissioner

M. S. Dept 27-11-78-

2 Coff. 14-12-78-
25

ovt. of (1878) Works.

PUBLIC WORKS.

4-30 Am
12-2

Dated

Issued

Recd.

Regd.

G. O. 27 Mar 1878, No. 6544W

Nos. 328 to 329

onstruction of Track &c
across the Cocum

A Committee appointed
with the view of obtaining
matured professional
opinion as to the —